AMENDMENTS TO THE CLAIMS

1. (Currently amended) A system for transmitting multiple data frames to deep packet processing functions in a given sequence, performing the deep packet processing on the frames and forwarding the processed frames to their destination in the same given sequence, comprising:

a) an input buffer for receiving frames for processing;

b) a unit for determining the deep packet processing operation to be performed on each frame;

c) an arbitrator for assigning each frame to one of a plurality of processing core engines;

d) an output buffer for collecting the processed frames, and

e) a sequencer for forwarding processed frames from the output buffer to their destination in the same order as the frames are received by the input buffer.

2. (Original) The system according to claim 1 wherein the input buffer is contained in a Data Moving Unit.

3. (Original) The system according to claim 2 wherein the output buffer is also contained in said Data Moving Unit.

4. (Original) The system according to claim 1 wherein the unit for determining operation comprises a Frame Header Processing Unit having a buffer capacity at least twice the size of the largest frame to be processed.

5. (Original) The system according to claim 1 wherein each core engine has an associated memory for storing a frame assigned to the engine until the engine is free to perform the operation on the frame.

6. (Currently amended) A method of transmitting multiple data frames to deep packet processing functions in a given sequence, performing the deep packet processing on the frames and forwarding the processed frames to their destination in the same given sequence, comprising the steps of:

a) receiving frames into an input buffer;

b) determining the deep packet processing operation to be performed on each frame;

c) assigning each frame to one of a plurality of processing core engines;

d) collecting the processed frames in an output buffer; and

e) forwarding processed frames to their destination in the same order as they are received into the input buffer.

7. (Original) The method according to claim 6 wherein the input buffer is incorporated into a Data Moving Unit.

8. (Original) The method according to claim 7 wherein the output buffer is also incorporated into said Data Moving Unit.

9. (Original) The method according to claim 6 wherein the processing operation to be performed on each frame is determined by a Frame Header Processing Unit, said unit having a buffer capacity at least twice the size of the largest packet.

10. (Original) The method according to claim 6 wherein each frame is stored in a memory associated with the assigned engine until the engine is free to perform the operation on the frame.

11. (Currently amended) A multiprocessing system including means for preserving the sequence in which multiple data frames are transmitted to deep packet processing functions and the processed frames are then forwarded to their destination, said means comprising:

a) an input buffer for receiving frames for processing;

b) a unit for determining the deep packet processing operation to be performed on each frame;

c) an arbitrator for assigning each frame to one of a plurality of processing core engines;

d) an output buffer for collecting the processed frames; and

e) a sequencer for forwarding processed frames from the output buffer to their destination in the same order as they are received by the input buffer.

12. (Original) The system according to claim 11 wherein the input buffer is contained in a Data Moving Unit.

13. (Original) The system according to claim 12 wherein the output buffer is likewise contained in said Data Moving Unit.

14. (Currently amended) The system according to claim 11 wherein the unit for determining the deep packet processing operation to be performed on the frame by each core engine is a Frame Header Processing Unit, said unit having a buffer capacity of at least twice the size of the largest frame to be processed.

15. (Original) The system according to claim 11 wherein each core engine has an associated memory for storing a frame assigned to the engine until the engine is available to perform the operation on the frame.

16. (Currently amended) In a multiprocessing system in which the sequence in which multiple data frames are transmitted to deep packet processing functions and the processed frames are forwarded to their destination, the method of transmitting multiple data frames to deep packet processing functions in a given sequence, performing the deep packet processing on the frames, and forwarding the processed frames to their destination in the same given sequence, comprising the steps of:

a) receiving frames into an input buffer;

b) determining the deep packet processing operation to be performed on each frame;

c) assigning each frame to a processing core engine;

d) collecting the processed frames in an output buffer, and

e) forwarding processed frames to their destination in the same order as received.

17. (Original) The method according to claim 16 wherein the input buffer is incorporated into a Data Moving Unit.

18. (Original) The method according to claim 17 wherein the output buffer is also incorporated into said Data Moving Unit.

19. (Original) The method according to claim 16 wherein the operation is determined by a Frame Header Processing Unit, said unit having a buffer capacity at least twice the size of the largest frame to be processed.

20. (Original) The method according to claim 16 wherein each frame is stored in a memory associated with each engine until the engine is available to perform the operation on the frame.

21. (Currently amended) A system for transmitting multiple data frames to deep packet processing functions in a given sequence, performing the deep packet

processing on the frames, and forwarding the processed frames to their destination in the same given sequence, comprising:

a) an input buffer for receiving frames for processing, having a buffer capacity of at least twice the size of the largest frame size, said buffer incorporated into a Data Moving Unit;

b) a Frame Header Processing Unit for determining the type of deep packet processing operation to be performed on each frame;

c) a plurality of processing core engines wherein each core engine has an associated memory for storing a frame assigned to the engine until the engine is free to perform a deep packet processing operation on the frame;

d) an arbitrator for assigning an ascending frame sequence number to each frame and for forwarding each frame to one of the core engines for deep-packet processing;

e) an output buffer for collecting each frame as it is processed by a core engine, said buffer comprising a portion of the Data Moving Unit; and

f) a sequencer for forwarding processed frames from the output buffer to their destination in the same order as they are received by the input buffer.

22. (Currently amended) A method of transmitting multiple data frames to deep packet processing functions in a given sequence, performing the deep packet processing on the frames and forwarding the processed frames to their destination in the same given sequence, comprising the steps of:

a) receiving frames into an input buffer that is incorporated into a Data Moving Unit, said buffer having a buffer capacity of at least twice the size of the largest frame size to be processed;

b) determining the type of deep packet processing operation to be performed on each frame, using a Frame Header Processing Unit;

c) assigning each frame to one of a plurality of processing core engines, each frame being stored in a memory associated with a core engine until the engine is free to perform the processing operation on the frame;

d) performing at least one deep-packet processing operation on each frame;

e) collecting the processed frames in an output buffer that is incorporated into a Data Moving Unit; and

f) sequencing and forwarding processed frames to their destination in the same order as received into the input buffer.